

THE
INAUGURAL ADDRESS
ST. GEORGE'S HOSPITAL,
1892.

ROBERT L. BOWLES.

AA79

Bristol Medico-Chirurgical Society

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SIR JOHN RUSSELL REYNOLDS, BART.

President of the Royal College of Physicians,
London.

SHELF

D A.

ERRATA.

PAGE 20 :

6th Line—read Professor instead of Monsieur.

9th Line—read Chauveau instead of Chaveau.

With Kind regards,
R.L.B.

THE
INAUGURAL ADDRESS

ST. GEORGE'S HOSPITAL,

1892.

BY

ROBERT L. BOWLES,

M.D.,

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PHYSICIAN ST. ANDREW'S CONVALESCENT HOME, FOLKESTONE.

FOLKESTONE :

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1892.

TIME honoured custom, with but few exceptions, has hitherto entrusted the delivery of the Introductory Address to one of your Staff of Teachers. It was wise and right that this should be so, for no one is so capable of directing you on the road you should follow or of guarding you against the dangers and difficulties you are liable to encounter. On the present occasion the wisdom of your Teachers has departed from them, for they have gone astray in requesting "an outsider" to address you; one in no way connected with the present working of their admirable school, but one who, although anchored for the last six and thirty years on our South East coast, nevertheless claims, that he has never failed to entertain during the whole of that time an ardent interest in his dear old school and in every one connected with it. With much diffidence and a deep sense of responsibility, I accepted the call made upon me; I accepted it almost as a command, and I feel sure that I shall at least, have the indulgence of your Staff for my imperfections and short-comings.

As I propose to approach my subject from the position of an old student, rather than from the professorial point of view, it may be, that I shall not express myself altogether in the language of the Schools,

that I may give expression to opinions even, for which your Teachers ought not to be held responsible ; but as they have imposed upon me no restrictions and have left me " fancy free " I take courage and proceed.

The past history of Medicine, from the days of Hippocrates down to modern times, the works and characters of the illustrious dead, especially of those connected with St. George's Hospital, have so often and so admirably been commented upon in the able addresses of those who have preceded me, that I venture to pass by such subjects in the silence of respectful sympathy. My endeavour shall be rather to excite your interest in the views and doings of a country physician, who has passed through all grades of his profession and has had to follow lines of his own, under influence of principles acquired in this very hospital as his first lessons in the eager and honest pursuit of truth.

I would begin by saying a few kindly words of welcome and advice to you my young friends, who now are launched into the vocation of your life. Many of you have left the paternal roof and its happy surroundings for the first time ; you have left the fostering care of anxious and loving parents for the dangers and temptations of the modern Babylon, and some of you may well be distrustful of your powers to meet and avoid them. Let me hasten to reassure you, for this great Babylon is a centre of good as well as of evil, and in your Teachers, you will find every help you can

possibly desire ; a personal knowledge of them and of their relations with their pupils for forty years, enables me to say this with some authority. They not only do their utmost to help you to sound knowledge of the principles and practice of our noble profession, but are ever at hand with ready sympathy and friendly help, whenever necessity arises. They are truly and heartily "in loco parentis," and with unflagging zeal, watching for opportunities to assist and protect you, and to help you to be morally strong and happy. More than this, they remain your truest friends for life. To me, no happiness, outside my own home, has ever equalled that which has arisen from visits to the school and wards of my old Hospital ; from the genial welcome, and from the friendly grasp of the hand of my old friends and masters, and from their long sustained interest in all my doings. I go home refreshed and strengthened with the love of my fellows.

When the heart is young, when it is susceptible and impressionable, when the poetry of life is being felt and lived, then above all other times, is the influence and kindly interest of such friends as these, of transcendent value ; their advice given so freely and so kindly is appreciated and acted upon, the moral tone inculcated by them is infectious and lasting, and the foundations are then laid of a *character* which shall in the future prove itself worthy of credit and respect. I appeal to you therefore, before and above all else, seek the support of a love like this which, believe me, is beyond all price.

It is remarkable that when an Englishman undertakes a matter of Trust for others, how he will postpone or neglect his own affairs, and even willingly suffer large pecuniary losses in favour of the efficient and earnest execution of that Trust. The tradition of public office in this country, whether unpaid or nominally paid, rests entirely on this sense of duty to a Trust. Many of the most hard working officers remain altogether unknown, and are content to work on in obscurity, so long as they have the consciousness of acting for their country's good. Our public men, from the Prime Minister down to the humblest Guardian of the Poor, the Presidents of our Colleges of Physicians and Surgeons, all shew this absolute devotion to duty, and believe me, gentlemen, the present and past Deans and Officers of our School are no exception to this general rule. This ardent desire to carry out one's share of duty to one's neighbour and to the State pervades the land, it constitutes almost the very existence of our social fabric, and rivals if it does not surpass the self-sacrificing passion of the glorious days of Ancient Rome.

Our noble Charities (among which none is more noble, or showers more mercies around than this splendid Institution in which we now are), all our Societies for the deaf, dumb, blind, and incurable, for the prevention of cruelty to children and to animals, do they not all testify to the living working of this same principle of duty to our neighbour? Such beneficent institutions, however, can only exist

and flourish under a well ordered Government, they are entirely dependent upon it ; they are, so to say, the flowers and fruit of good Government. Would any of us stand by, gentlemen, and allow such noble work to be mercilessly sacrificed to the delusions or criminality of those destroyers of hearth and home, the Ravachols of the day, of whom Milton would say :

“ Licence they mean when they cry Liberty.”

Shall we not rather stand shoulder to shoulder and support those, whose duty it is to maintain social order, and assist in strangling at its birth this new-born social monstrosity ?

A great nation must live by Law and not by Anarchy.

I will not tire you with describing the wonderful changes for the better which have taken place at St. George's during the last six-and-thirty years. You will assume that with a Staff so anxious for the welfare of the Hospital and of the School, as St. George's has always been blessed with, these two important institutions could not stand still. Nor will I enter into detail as to the special advantages of St. George's for medical studies ; but a few things I must draw attention to. In the prospectus of the present year it is stated that “the opportunities of Clinical Studies are virtually unlimited, since the wards, containing 350 beds, are thrown open to the students in a manner which is comparatively unrestricted.” It is further shown that “this extremely advantageous

arrangement is due, in the first place to the cordial relations existing between the general body of Governors and the Medical Staff, and in the second place to the universally recognised high tone and gentlemanly bearing of the pupils ; which allow the authorities to offer such extensive privileges without apprehension." Now I should like cordially to endorse this expression of opinion ; I am quite sure it is true, and for this high tone we have to thank, as I have already said, the officers of our School ; it is a thing much to be valued and lasts long, but it brings also its responsibilities ; a St. George's man is expected at all times and under all circumstances to be "a gentleman." In the wards especially must our conduct be irreproachable, and our relations with patients and with nurses strictly formal and sympathetically polite ; in such a place jesting and frivolous conversation are impossible, for the place is holy, hallowed by the presence of suffering and the majesty of death ; we should there feel ourselves nearer to the presence of God.

The advantages of the Medical School arrangements too, are so clearly set forth in the Prospectus, that I need only refer you to the Prospectus itself. There is, however, to be one great change made, so great and so important, that I must emphasize what is simply stated in the Prospectus, viz : the increase in the number of House Physicians and House Surgeons. The advantages to be obtained by pupils holding these appointments are incalculable. The extension of the medical curriculum to five years now imposed by the

Medical Council, will enable many more of the pupils to obtain this advantageous position. I can assure you, gentlemen, it is a position well worth struggling for, and each pupil has every opportunity of preparing himself for this "blue ribbon" of St. George's. He must pass through certain periods of gradation, as Assistant to the Ophthalmic Surgeon, to the Dental Surgeon and the Orthopaedic Surgeon, and he must also previously have held appointments in the skin, throat, and obstetric departments. He will thus be enabled to grasp with considerable thoroughness the technicalities of each department, and also—a very important matter—he will learn to handle and apply the scientific instruments and apparatus peculiarly in use in those respective departments, and he will have the opportunity of practically applying his knowledge of those principles of Physics, the value of which I wish most particularly to insist upon.

But before I pass on, I would draw your attention to the liberality of the Hospital Authorities in not demanding extra fees for any of these valuable appointments.

Of your Staff I shall say little, where all are so good how can one discriminate? I might tell of the glories of those I know best, but it would be invidious to single them out. Of the changes that have taken place in your Staff during the year, there is happily little to say. Sir William Dalby of world-wide reputation, who for many years had

ministered to the wants of the suffering poor in the department of Aural Surgery and conferred much distinction on our Hospital, having arrived at years of discretion has "left school," but he will continue to shed his lustre upon us as Consulting Aural Surgeon to the Hospital. Dr. Bull reigns in his stead, and we know that his reign will be happy and beneficent both to the School and the Hospital.

It is only natural that the highly educated Physicians and Surgeons, leaders of our educational department, should see and accentuate the importance of the study of the Natural Sciences, as preliminary to the more technical study of our profession. None can know better than they, the wide range of Medicine, its many departments and its difficulties; they above all, specially understand the value of those Sciences that lead on to Medicine, and the help they lend to the cure of disease and to the interpretation of its hidden mysteries. With such guidance, you need not be alarmed at the number and complexity of the studies to be faced, for by the anxious and unceasing efforts of your Teachers, those studies are so arranged, so dovetailed into one another that they become less and less overwhelming "*pari passu*" with your daily work and progress. You may be sure that the studies decided upon and the course to be followed are in every way the best and most calculated to promote your future welfare, as well as to advance the Science and Practice of Medicine; for the enormous gain of a scientific training is not to be calculated, its far

reaching consequences cannot be gauged. Daily, hourly, are we applying it, automatically and unconsciously perhaps, but still applying it, and step by step adding the exactitude of Science to the art of Medicine.

However we, who sat at the feet of the Gamaliels of the old School may deplore it, the apprenticeship system is dead, defeated and killed by the rapid march of Science; the revolution is complete, we cannot march backwards, and so that system must, once for all, be wholly and finally abandoned. We do not say this without a pang nor without a consciousness that much that is good will go with it. The business habits so essential to the well doing of the general practitioner, the knowledge of treating minor surgery and ephemeral diseases in the homes of patients, the niceties of practice, the early acquaintance with infectious diseases which we never see in our hospitals, will all be missed by the student of to-day. Fewer mistakes may, it is true, be made in the future; the policy of a nation may not again be changed, interrupted and hampered by the enormous bloodlettings which led to the death of a Cavour, but men may now, on the other hand, be destroyed by some spurious child of Science, by some ill-considered, so-called "scientific discovery." It was but lately that the Prefect of St. Petersburg in the vain hope of achieving rejuvenescence, fell a victim to some atrocious compound with the pretentious name of Vitaline.

We must not forget, moreover, in our desire of acting

on purely scientific grounds that our mission is, in every way possible, to relieve human suffering and to avert preventible death ; nor must we scruple to administer the soothing, the comforts and consolations afforded by remedies begotten may be of ignorance and superstition, but proved nevertheless by experience to have been blessings in the past.

Circumstances a long time ago awakened in me a sense of the enormous possibilities of Science in Medicine, and at the same time the grim fact of my own ignorance. Physical phenomena crossed my path which I could not explain or understand, phenomena contrary to my pre-conceived thoughts. By the help of friends and of books I gradually began to see light, and I presume to hope that it will not be unprofitable nor altogether uninteresting if I try to awaken in you the same craving for more light which I have myself experienced. The burden of my song, therefore, gentlemen, will be the application of Physics to Physic, at least within the limits of my own experience. May I, however, be permitted to assure you that if in doing this I often refer to my own doings and to my own observations, it will be from compulsion, not from choice—I cannot help it, I am telling my own story.

Early in my career, in the dead-house of this Hospital, while assisting at experiments for the late Dr. Marshall Hall, intended to apply to the treatment of the apparently drowned, I was made to see

the influence of Gravitation in various positions of the human body, and to realise the dangers which might arise to life in such cases, if knowledge of that influence were not rightly applied. A few years later, I found that stertorous breathing in Apoplexy was by no means an essential element of this malady, but an accidental accompaniment, due in most cases to the accident of the patient happening to be on his back, or to some derangement of the ordinary relations of the pharynx, or to some obstruction narrowing the respiratory channels, causing audible vibration of the air in its course. Coughing, sneezing, snoring, croup, the various sounds both normal and abnormal discoverable in the chest and other internal organs by auscultation, percussion and palpation—*all* have their origin in physical conditions. I have demonstrated elsewhere, that apoplectic stertor is but a symptom with two meanings: the noise expressing the mechanical interference, and the mechanical interference expressing unconsciousness. It is moreover both a danger signal and a danger which can in all cases be averted.

Snoring generally, and especially its frequent presence in pugs and pigs and its absence in sheep and oxen, very naturally next attracted my attention and called for investigation.

Roaring in horses—[a subject some years ago carefully considered by our distinguished Physician, Dr. John Ogle, in a Paper to the Pathological Society]—

and other noises of various kinds in living animals, all have to be relegated to the domain of Physics, for they are all attributable to mechanical causes, to "a something" standing in the way of easy, natural breathing.

Suffocation, supervening in states of unconsciousness from whatever cause, is made dangerous in the same way, as also are various forms of paralysis ; for as so-called vital force diminishes, so do the forces of Physics then assert their sway. The paralysed muscles, as before pointed out, no longer amenable to the subtle influence of the patient's will become the sport of forces from without, forces which will only yield to what the Ancients called the " *Vires Vitae*."

In Surgery almost all its work is done by the proper application of the laws of Physics : injured parts and broken limbs are kept at rest, dislocated parts are placed in their natural positions, redundancies are removed, and natural deficiencies often well supplied ; crooked paths are made straight, and blocked and narrowed ones are rendered patent : stiffened joints are made to move, crooked limbs put into shape, eyes are made to see that would not, and ears to hear that could not. The applications of the laws of Physics in Surgery are almost endless. One can scarcely conceive Surgery to be anything else than a department of Physics, a physical Art.

And Medicine ! formerly the region of the unknown and the happy hunting ground of quacks, is rapidly following in the same lines. The so-called

practical man as well as the believer in dogmas and nostrums, is rapidly giving way to minds trained by the laws of Physics. Physiology, Medicine's forerunner and its handmaid, is steadily step by step and without prejudice elucidating the ways and doings of animal life. By instruments of the most elaborate and delicate nature, by patient and continuous observation, by anatomical and histological searchings, and by the application of the laws of gravitation, chemistry, heat, light, and electricity,—always, mark you, by ways and means connected with Physics, we are getting to understand better and more surely the movements and functions of respiration, of circulation and digestion, of secretion and excretion, and finally we hope even to understand the more subtle and mysterious of all functions—the operations of the nervous system. What then is Medicine! or Physic! or the sphere of the Physician? What else than the application to disordered and diseased conditions, of the ways and means of physiology, in order that we may verify and reduce to experiment the disordered state, that we may learn for certain its real nature, and that we may bring it back to order by the use of natural and appropriate means.

Let us pass on to the more definite purpose of my address, viz., to impress upon you the absolute necessity of acquiring sound principles and exactness in those sciences which have been laid down for you by authority as indispensable preliminaries to the proper study of medicine. I desire to do all this the more

anxiously, as owing to the lack of opportunity in my earlier days, I personally, have suffered from my own deficiencies in Science. I found that to be exact in any observation I had to increase my knowledge of the principles on which I believed my observation to be based, often too, by the light of this new learning, have I had to retrace my steps to find the right path in order to make my observations conclusive. It is by experiment that we learn the true cause of disease and its effects. "Do not think ; try," was an axiom, the axiom I may say of the great Hunter, I quote from a thoughtful address of Sir James Paget to the students of the Liverpool College, a year ago. A physician, or medical man, or doctor with an active imagination, a play of fancy, may be full of thinking, but unless he brings it to a practical issue, unless he tests the value of his thought, and enables his fellows to understand and apply it, medicine is not advanced, nor is the world the better.

Sir John Simon in his admirable address on state medicine at the General Medical Congress in 1881, states so clearly the value and nature of experiment in medicine that I crave your indulgence, while I quote the contrast he draws between two different sorts of experiments. He says "The experiments which give us our teaching with regard to the causes of disease are of two sorts : on the one hand we have the carefully pre-arranged and comparatively few experiments which are done by us in our *Pathological Laboratories*, and for the most part on *other animals than man* ; on the other hand, we have

the experiments which *Accident* does for us, and, above all, the incalculably large amount of crude experiment which is *popularly done by man on man* under our present ordinary conditions of social life, and which gives us its results for our interpretation."

"Let me illustrate my argument by showing you the two processes at work in identical provinces of subject-matter. What are the classical experiments to which we chiefly refer when we think of guarding against the dangers of Asiatic cholera? On the one side there are the well-known *scientific* infection-experiments of Professor Thiersch, performed on a certain number of mice. On the other hand, there are the equally well-known popular experiments which, during our two cholera epidemics of 1848-9 and 1853-4 were performed on half a million of human beings, dwelling in the southern districts of London, by certain commercial companies which supplied those districts with water. Both the professor and the water-companies gave us valuable experimental teaching as to the manner in which cholera is spread."

"The commercial experiments which illustrated the dangerousness of sewage-polluted water-supplies, cost many thousands of human lives; the scientific experiments which, with infinitely more exactitude, justified a presumption of dangerousness, cost the lives of fourteen mice."

Let us now, gentlemen, give a little consideration

to the bases of all true medical work, Anatomy, Physiology and Pathology, the fields of medicine on which the sciences play their parts.

Anatomy contemplates the parts of the body in a state of rest, the structures on which functions play. The careful study of it cultivates in a very high degree the faculty of observation, and demands of you the exercise of the most scrupulous exactness. You learn from it the position of organs and the relations of parts to one another, and you learn also to touch and handle the tissues and to discriminate their nature and properties. The study of Anatomy is sometimes thought to be dry and uninteresting, a mere bundle of facts, but the initiated know better, and if we wander into the paths of *Comparative Anatomy*, we find no bounds to the scope of the imagination. A Cuvier did not find it dry, nor did our own Sir Richard Owen, of whom it has been truly said :

“ From the polyp to man, he has thrown light over every subject he has touched.”

Physiology on the other hand, contemplates the parts of the body as living and in process of change : change which consists in the more or less constant play of all the physical forces, not only those which are of a mechanical kind, but also Chemistry in all its ramifications, Heat, Light, Sound, Electricity and so forth. Change of energy and of form are the necessary results of function, and function ceases only with death. Organs specially set apart, display in action these

physical changes, and we understand these changes as the functions of the respective organs. Each organ is developed for functions peculiar to itself, and one organ cannot supply the precise function of any other. A muscle cannot be made to see nor the retina to effect movement.

Pathology may be said to be but a part of *Physiology*: the one part, *Physiology*, declaring what is normal in function, the other part, *Pathology*, declaring what is more or less than normal; for instance, in *Physiology* the respiratory and circulatory movements have a normal rate and rhythm, while *Pathology* declares what is more or less a departure from the normal. In *Pathological Anatomy* the same can be said of structure, *Hypertrophy* and *Atrophy* being simply the plus and minus of normal. *Degeneration* occurring in the living body is a physico-chemical change of material affecting molecules that, having ceased to live, still linger in the body, fulfilling no function, and undergoing those changes which would have taken place equally in the same structures outside and apart from the body; and are the beginnings of what we now recognise as senile changes occurring in some natures and organs earlier than in others. To all, the beginning of life is the beginning of death—we are only built to last a certain time.

Hippocrates more than 2,000 years ago, proclaimed *Pathology* to be a branch of the science of Nature; the slowness of its development can only be explained by

the equal slowness of the progress of the Natural Sciences themselves. Of late years, however, advances have been made truly "by leaps and bounds." The knowledge of yesterday, too often assumed to be final and immutable, has often been made obsolete by the knowledge of the morrow. Monsieur Schroeder in Germany and Monsieur Pasteur in France by their investigations on fermentations and putrefaction, and Monsieur Chaveau on the particulate nature of contagia, opened up an entirely new world to us all. We have now not only to study the causes as well as the changes of disease in the body, but also the doings of the Bacterium outside the body and within it. It has often been said that the strong shall inherit the earth, but this must now be taken only in a limited sense ; rather would it seem that the chief powers of Nature rest with the infinitely small, an elephant and an Alexander, are they not equally subject to the destructive ravages of the microbe, by microbes are we not all reduced to dust ?

" Imperial Cæsar, dead and turned to clay,
Might stop a hole to keep the wind away."

Pathology then, comprising all those grave and palpable changes in the body which we are accustomed to regard as disorder, disease, or death, is chiefly applied by practising physicians to individuals. We have to reckon with the morbidity of the condition in particular cases, and to get at the root or cause of the condition ; if we have a parasite we deal with it ; if disordered function, we deal with that, and the plus or minus of that

function will probably sufficiently indicate our course of action in treatment. But there is a much wider sense in which during recent years, we have been compelled to take the problems of pathology into our consideration; I mean in their relations to the body Politic, what we now understand as STATE MEDICINE. Until the reign of our present Queen, almost no notice was taken of the general health of the country, disease and death were allowed to have their way: contagia were not understood, and little or no effort was made to prevent one individual from causing the death of multitudes. To Sir Edwin, then Mr. Chadwick, in the early part of Her Majesty's reign, is due the honour of rousing the Government of the day into action, by demonstrating that a great number of diseases of a very deadly and contagious character were due to filth and insanitary conditions; and that they were almost all, certainly preventible. Sir John Simon, who is happily still amongst us and of whom we may all well be proud, an early pioneer in modern pathology and always abreast of that department of medicine, a great Surgeon and a Statesman by nature, on account of his general excellence, was taken out of his ordinary sphere and placed at the head of the Medical Department of the Privy Council. Sir John soon began to show that the science of Medicine was a most important part of the political economy of the country, and that the medical profession must therefore be taken well into account in the country's political organization, and he succeeded in due time in bringing the State and the Medical

Profession into organized relations with one another. This, gentlemen, was a great work which, (though partly destroyed by subsequent politicians), is now bearing fruit and will continue, as the education of the country improves, to bear relatively more and more fruit. By that work the average duration of life has been much increased, and damaged health and other sufferings consequent on disease have been very greatly diminished. If you want to be interested and entertained, let me commend to your notice Sir John Simon's delightful book on "English Sanitary Institutions," it is as interesting as a novel and laden with grand ideas and words of wisdom. Each succeeding year shows us more and more clearly the great value of Physics in the department of Preventive Medicine, indeed, our knowledge of them cannot be too high, for the field covered by Preventive Medicine is so large and embraces so many and such vast interests, that mistakes and guesses must not be permitted: advances in such a field must only be made on lines of certainty. After this sketch of the relations of Physics to the human body in health and in disease and through Preventive Medicine, to the nation at large, I will attempt to illustrate in a general way in what manner Physics may be applied for remedial purposes.

First we will take RECREATION.

CHANGE! muscular and nervous, lies at the root of all recreation; Change, short of fatigue, sufficient to relieve the monotony of life. To the

working man with tired muscles, one can scarcely conceive football or lawn tennis to be a refreshment. To you, gentlemen, on the other hand, Students in the true sense of the word, with your mental powers "all a-weary" from that intense application so notoriously characteristic of St. George's men, change to muscular work is the very natural craving of the system. It would be supererogation to impress upon you that "All work and no play makes Jack a dull boy." In the present temper of "Young England," "Games" are rife enough and you will find at St. George's every opportunity of gratifying your desires in that direction. The warning you will more probably need is, that :

"Too much work and too much play will make Jack a duller boy." !!

If mentally tired, you must have rest, repose of mind and body, rest in bed, sleep,—

"Tired nature's sweet restorer, balmy sleep."

How can such subjects be adduced in illustration of the influence of Physics? Think gentlemen, for a moment:—do they not imply a direct and positive diminution of all the functions of the body, and therefore of all those Physico-chemical changes which conduce to the evolution of force: the recumbent position, diminution of heart movements, lessening of the respiratory functions and of muscular movements generally, of the many acts concerned in digestion and secretion, a lowering of temperature and a diminished tendency to over-activities in the vascular system?

EXERCISE ! PASSIVE MOVEMENTS ! MASSAGE !

Here we have the reverse of the picture, levers of enormous power and to be used only with knowledge ; their connection with Physics is perhaps more readily apparent and the connection looks at first sight so simple, that little need be said on so self-evident a matter, but, gentlemen, when brought face to face with a case of illness you may find it difficult, without much reflection, to say how much or how little a man may walk, whether he may go upstairs or uphill, whether he may take a voyage or climb mountains, whether delicate joints or organs should be moved or manipulated, whether, and how much eyes may be used, and to what extent a mind may be used or abused, and last, but not least, whether one of the later developments of treatment, MASSAGE, may or may not be put into requisition.

AIR ! FRESH AIR ! CHANGE OF AIR ! more of Nature's Medicines ! I much wish, gentlemen, I could supply you with guiding dogmas on this important department of Physics, but although I have now lived in a well-known health resort for six and thirty years, and have had my attention constantly directed to the consideration of the value, and differing applications, of air and change of air, I have only learned to realize the vastness of the subject, it would appear that we are still only on the fringe of it. The Physicist, the Meteorologist, the Chemist, the Electrician, the Histologist, all have to

be called in requisition at the very threshold of the enquiry. Everybody knows that fresh air is better than foul, that the top of Mont Blanc is a more healthy spot than the black hole of Calcutta, and that sea and mountain air are to be preferred to close rooms, stuffy towns and damp malarious valleys. We understand too in a general way the value of the differences of barometric pressure, and that the amount of aqueous vapour contained in air varies at different heights, that the dryness of the air at great elevations produces important effects on the animal economy, and that its purity and freedom from microbic organisms must be viewed favourably by the physician.

What can we say of SEA AIR? I know that it must be very pure, inasmuch as it is free from dust, and therefore free from myriads of animal and vegetable organisms that bode no good to susceptible humanity; putrefaction and pernicious chemical agents are also here conspicuous by their absence, and yet sea air does not suit everybody; some declare they become what is commonly understood as "bilious" at the sea, and I believe they are right; some again are invigorated and refreshed and can eat almost without ceasing; some sleep badly and get nervous and depressed, others declare they "sleep like tops"; some are well at Brighton and ill at Folkestone, others exactly the reverse. Certain diseases too, do well at one place and not at another, and yet the meteorological differences in the two places are no more apparent than are the reasons of the differences in the effect of air on disease.

As subsidiary parts of this great whole, the heating and ventilation of rooms, draughts, cubic air space, as well as the presence or absence of malarious or pernicious gases or impurities of any kind, all claim your attention, and as you see, a clear precise knowledge of the first principles of Physics.

HEAT! LIGHT! ELECTRICITY! What of them? Powerful agents of Nature truly, and if applied without a fair knowledge of their properties, dangerous in the extreme. About them we have still much to learn. They are all closely allied to one another and are intimately connected with the phenomena of life. To the human body Heat in various forms has been most commonly applied as a remedy, and in this relation it appears to be the best understood of the three. We readily see its effects on the smaller vessels and capillaries and can picture to our minds the changes and actions of the cells contained within them. LIGHT has scarcely been considered except in its relations with the special sense of sight, but I believe I have shown from my observations on the varying effects of heat and light upon our bodies in the high Alps and on Alpine snows, that it is Light and not Heat as we usually understand it, which produces all the changes known as sunburn, a condition which when severe, amounts to a true inflammation, with heat, pain, swelling, and blistering. If Light can produce this one great pathological disturbance, how many lesser changes may it not effect? We begin to hear already of treating disease by sun-baths, and we have long known

the value of sunshine on enfeebled and anæmic conditions. Of ELECTRICITY and of its wonders we know and hear much. One is almost daily startled with some new and astounding discovery connected with it, and yet it is only in its infancy and not sufficiently subordinated to law, for us to foretell its fuller powers. Of the effects of its different forms on the human body we know less, and yet sufficient to claim a great worth for it in the diagnosis and treatment of many diseases of the nervous system, sufficient too, for us to realise its awful power, and to imagine the thousand ways in which it may do good in the future, in your more accomplished hands. On the other hand what an engine of mischief may it not be in the hands of the ignorant? Learn to understand this great power, and keep your future patients out of the hands of the latest of modern pests, the Electric Quack!

Lastly, we come to what in the past has been considered almost the only province of the doctor—THE ADMINISTRATION OF MEDICINES. In this province Empiricism has hitherto been almost supreme, but thanks to the Sciences, clearer and more certain views are taking its place. *Materia Medica* or the knowledge of the remedies employed in medicine has its divisions, its departments; each and all being worked on scientific principles, will require all your preliminary knowledge to prosecute their study successfully.

PHARMACOLOGY is defined as “a knowledge of the mode of the action of drugs upon the body generally,

and upon its various parts." See what a range we have here ! To be perfect we must have first, a perfect knowledge of Physiology and of drugs, and secondly, we must remember that substances do not act on the human body as they would in a test tube, they produce in the body actions and reactions, affecting at one time one organ, at another time another, and it is at present impossible to produce a simple precise action which would make an observation conclusive.

THERAPEUTICS RATIONAL AND EMPIRICAL imply the administration of remedies suitable for the relief of particular symptoms, in proper doses and proportions ; a very important matter for the patient, but a matter frequently dealt with in a most reckless and perfunctory manner by the prescriber. Commonly, even at the present day, a number of drugs are jumbled together in a mixture, in the hope that some of them may hit the mark. In old fashioned prescriptions we see six or eight different remedies combined, of these, each may be a preparation compounded of several drugs, so that in one prescription we may be giving the poor patient as many as thirty or forty different drugs of more or less potency. We should know what to do, and do it ; select our single bird, not blaze away at a covey ; first see our object distinctly, not fire into a fog. Not a single drug ought to enter the body except under clear intention what object it is to fulfil there. Compounds may be good cookery, but they do not satisfy our ideas of scientific medicine.

Gentlemen, notwithstanding all I have claimed for

the study of Physics in Medicine, even a very wide knowledge of them may not lead to the making of a good doctor. We cannot by any amount of training make a man distinguish himself in a subject to which by nature he is unfitted. Like a real artist, the man must have "The touch of the finger of God, of the all-informing, all-creating imagination."

"There's a divinity that shapes our ends,
Rough-hew them how we will."

For the successful practice of Medicine (and in using the generic word Medicine, of course we comprise throughout Surgery also) there is an individuality necessary, almost more than in any other profession; and above and beyond all else, an abundance of Human Sympathy, that Christ-like quality from which springs the craving desire to comfort the afflicted, to relieve the distressed, and to "speak gently to the erring,"—characteristics of the members of our profession, of which we may all be justly proud. Dr. Billings in his celebrated address at the International Medical Congress in 1881, told us that in writing we should, first, have something to say,—secondly, say it,—thirdly, stop as soon as we have said it. Gentlemen, my difficulty is not what to say, but rather, what not to say; inexorable time alone bids me stop; the "*Ars Medendi*" is so vast, so beneficent and so grand in every respect, that it is practically illimitable. In Bacon's use of the term it is co-extensive with the whole field of terrestrial nature, and the students of the physical and biological Sciences, in proportion as

they exercise the faculty which this knowledge confers on them, are emphatically, the servants of nature. Sir Thomas Brown, in his *Religio Medici*, tells us that "Nature is the Art of God" Don't ever let presumptuous puzzled-headed people, profoundly ignorant of even the first principles of Science, bewilder you into supposing that there is any antagonism between Religion and Science. There is no such antagonism. Our Religion tells us that God created the heavens and the earth; God equally created the mind of man, and to all things He gave laws and directions. The Theologian expounds the Moral Law, and tells us of the grandeur of the Creator, of His mercy and of His goodness; the man of Science interprets the Physical Laws, and equally tells us of the greatness and grandeur of the Creator. There is no real difference between these teachers, they only approach the grandest of all subjects from different points of view; every discovery of the Scientist can only tend to increase our wonder at the omniscience and perfection of the ways of God. Religion and Science may well jointly and equally be contributors to that education of man which leads on to his future happiness and welfare.

Gentlemen, remember this noble meaning of Medicine, and make yourselves worthy of so high a calling.

